



Prevalence of Common Eye Diseases Among Low Vision Students in Inclusive Schools of Coimbatore District

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ABSTRACT

The main aim of the study is to find out the causes of low vision among the selected children and to analyze the causes for low vision among the sample. Each eye disorder has educational implications. But these are not attached in the educational set up. Hence, an attempt is made to find out the different causes for Low Vision based on the medical report by the eye specialist. This compilation may help a teacher to plan Individual Educational Plan (IEP) to enhance his / her learning. For the study the investigator selected 93 children with low vision out of 93, 38 % boys and 62% girls. The number of sample used for the study was 93.

KEYWORDS : Lens Disorder, Genetic Disorder, Refractive error, Corneal Disorder, Retinal Disorder, Optic Atrophy, Macular degeneration & Cortical Visual Impairment

Global Prevalence of Low Vision – An overview

When referring to the fact sheet of World health organization currently 285 million people are suffering from visual impairment and out of 285 million, 246 million people are surviving with moderate to severe visual impairment. Also, it reveals that it is if we fail to prevent the problem the percentage may be increased from 75 million to 200 million by the year 2020

Also the fact sheet states that, 7% of the visually impaired are belongs to the age group of 14 -44 years and 4% of the people are in the age group of below 14 years, and about 135 million people are suffering from the problem of Low Vision and it is anticipated that the number is going to multiple in the year 2020.

Rationale of the Study:

A study was conducted by a group of people at Indonesia by S-M Saw and et al (2003), reveals that, the main reason for bilateral blindness is cataract about 61.3% of his samples were affected due to cataract problem and 48% people were identified with refractive error and the main reason for unilateral blindness is due to amblyopic and because of trauma 50% respectively.

A study was conducted in India to find out the main reason for blindness and vision impairment and the study was carried over at Orissa and Chhattisgarh examined 166 children out of 300 by Peter caton, sight savers concludes that, in Orissa 54% of children were affected by cataract a corneal diseases and in Chhattisgarh the main cause was the retina related diseases.

Another study done by Kansakar et al, at Nepal to find out the causes and to identify the need for low vision services for students studying at school for blind at Nepal, concludes that, they examined 285 students and saying that, in the age group of 5-29 years, about 3/4th of the children were become blind due to some reason before they complete the age of one year and 52% of the children were congenital blind. Out And after refraction it is found that, about 26 students (roughly 9 %) were having mild visual impairment, 21 students (7%) were severe visual impairment and 84 percentage of children are even not having light vision meaning they are totally blind.

And the reason was mainly due to corneal and retinal causes (34%), 13% of the students were affected by various dystrophies 20 % of the students had the problem with whole globe, and due to optic nerve diseases.

Also they tried to find out the etiology for the causes; about 42% of

children were become visually impaired mainly due to vitamin A and measles. 42 % of the students were due to hereditary diseases. And as a outset, they concluded that, about 48% of the children were affected by preventable causes and 16 percent of the children's problem is under treatable condition. And the group assessed through low vision assessment and found that, the children were able to read 2M print size with the assistance of low vision devices and they also they were benefited through telescopes to view the distant objects.

Need for the Study:

Education to Low vision is a recent entity. Research in the area of Low Vision is of recent phenomenon. Research revealed that, among 5 visually impaired children, 4 children have low vision. There are number of eye diseases causing low vision. But, they all put into 3 different vision loss namely 1) Central Vision Loss 2) Peripheral vision loss and 3) Blurred Vision. The teachers should know the implications causing various eye diseases. Each eye disorder has educational implications. But these are not attached in the educational set up. Hence, an attempt is made to find out the different causes for Low Vision based on the medical report by the eye specialist. This compilation may help a teacher to plan Individual Educational Plan (IEP) to enhance his / her learning.

Hence a study was planned with the following objectives:

- 1 To explore the Low Vision Students studying in inclusive schools
- 2 Find out the causes of low vision among the selected children
- 3 To analyze the causes for low vision among the sample.
- 4 To disseminate the information to the respective stake holders to plan IEP for low vision students.

Methodology Study area

The study was conducted in the inclusive schools in three blocks of ie Coimbatore City Block, Thondamuthur and in periyanaiken palayam Blocks of Coimbatore District of Tamilnadu. Presently there are three types of schools in Coimbatore District - 1) government run schools (corporation schools) 2) schools funded by the government but run by private trusts (aided schools) and 3) schools funded and administered by private trusts. The Coimbatore District consists of 278 Pre Primary Schools, 853 Primary Schools, 290 Middle Schools, 103 High Schools and 140 Higher Secondary Schools (Coimbatore District Profile 2012).

Sample for the Study

Samples of 93 low vision students enrolled in Inclusive schools were selected for the study.

Design

Descriptive survey design was adopted, which included selection, surveys and identifying causes for low vision was discussed.

Variables

The variables of selected samples are given in the following table.

Variable	Level
Gender	Boys & Girls
Age	6-11 Years, 11-15 years and 16 years and above
Causes	Lens Disorder, Genetic Disorder, Refractive error, Corneal Disorder, Retinal Disorder, Optic Atrophy, Macular degeneration & Cortical Visual Impairment

Tools :

- 1 Personal Data Bank
- 2 Checklist to collect clinical vision assessment it involves visual acuity (near and distance), colour vision, contrast, preference of lighting, visual field and it includes the diagnosis of Low vision. And, some information's were collected from the parents i.e. Medical history, blood related marriage (Consanguinity) birth history and observed directly observation the visual behaviors.

Data collection procedure

The study was conducted in three phases

In the first phase the investigator obtained permission from Chief Educational Officer of Coimbatore District to conduct the study and made a survey to identify the children with vision problem.

In the Second phase, the investigator identified the low vision children studying in the inclusive schools.

In the third phase, the students were referred to clinical examination to obtain a comprehensive medical report.

Data Analysis

Qualitative Analysis was used to assess the causes of low vision among the students studying in inclusive set-up.

Results

Result : 1

For the study the investigator selected 93 children with low vision out of 93, 38 % boys and 62% girls. The number of sample used for the study was 93, the below drawn table presents the sample distribution.

Table -1
Sex wise Sample Distribution

S No	Sex	Total	Percentage
1	Girls	58	62
2	Boys	35	38
Total		93	100

Result : 2

From the following table, it is reveal that, out of which, 38 % of the students belongs to the age group of 6-11 years, 39% are belongs to 12- 15Years age group and the remaining 23% represents the age group of 16 and above

Table -2
Age wise Sample Distribution

S No	Age	Total	Percentage
1	6-11 Years	35	38
2	12-15 Years	36	39
3	16 and above	22	23
Total		93	100

Result:3

For the study the Investigator selected 93 low vision children, out of 93, 29% children were affected with Aphakia, 14%, Oculocutaneous Albinism, 13% Micro cornea, Nystagmus with coloboma of Iris, 10% Retinitis Pigmentosa, 10% with High Myopia, 6% Corneal Opacity, 4% Convergent Squint, 3% Cortical Visual impairment and 2% Congenital Cataract

Table -3
Major Causes Identified

S/no	Causes	No of Children	Percentage
1	Congenital Cataract	2	2
2	Corneal Opacity	6	6
3	Aphakia	27	29
4	Micro cornea, Nystagmus with coloboma of Iris	12	13
5	High Myopia	9	10
6	Convergent Squint	4	4
7	Retinitis Pigmetosa	9	10
8	Oculocutaneous Albinism	13	14
9	Cortical Visual impairment	3	3
10	Macular degeneration	3	3
11	Optic Atrophy	5	6
Total		93	100

Table - 4
Eye diseases involving in the parts of the eye

S/no	Causes	No of Children	Percentage
1	Lens Disorder	35	38
2	Genetic Disorder	13	14
3	Refractive Error	13	14
4	Corneal Disorder	12	13
5	Retinal Disorder	09	10
6	Optic Atrophy	05	05
7	Macular Problem	03	03
8	Cortical Visual Impairment	03	03
TOTAL		93	100

The above table reveals that, out of 93 students, **38%** of the students affected with Lens disorder, **14 %** of the students affected from Genetic disorder and Refractive Error respectively, **13%** of the students were affected with Corneal disorder, **10%** of the students were affected from Retinal Disorder, **5 %** of the children affected by Optic Atrophy, and **3%** from Macular problem and Cortical Visual Impairment respectively.

Result-4- Lens Disorder:

From the study it reveals that, majority of the students that is, **38 %** of the students were affected by **Lens Disorder** which means, and the students were diagnosed with congenital cataract, corneal opacity and Aphakia. Congenital means, the loss of vision present from the birth. If the children affects vision loss due to cataract the lens become opaque and the light rays cannot pass through it, due to that, the children will have distant and near visual acuity problem and they will have blurred vision, which will limit their activities of walking in sun light, and they cannot view the faces of teachers in the class room, and they find difficult to see the black board writing. And, difficult to discriminate the colours and we should avoid direct light sources which will cause glare.

Result-5- Genetic Disorder

From the study it is understand that, about **14%** of the children were diagnosed with Genetic Disorder i.e. Oculocutaneous Albinism.

Albinism is one of the disease affects the children by birth which means, it is one of the genetic condition passed through their (because of consanguinity) parents. If it affects only the parts of the eye it is called as 'Ocular albinism' or if affects the total body right from head to toe means it is called as 'Oculocutaneous albinism'. The lack of pigmentation is leads to various eye problems especially the children

will have low visual acuity both in distance and near vision. Because of the abnormal development of the retina it affects the development of retina and which lead to poor vision it can be corrected with distant and near vision spectacles but it is difficult to bring 6/6 vision or normal vision. But these children will be greatly benefiting with low vision devices such as spectacles, telescopes and with magnifiers. And with the help of low vision devices majority of the children can benefit with ordinary print materials (Text books)

Because of the lack of pigment, they are advised to wear long sleeve, cap and sun glasses to protect from sun rays, or otherwise they will develop skin diseases and sun allergies or burns. And it is advisable that the school management should be given awareness about the consequences and they should not allow the children to play or stand under the direct sun light for long duration.

Result-6- Refractive Errors

From the study it is revealed that, **14 %** of schools going children were affected by refractive error ie having high myopia and convergent squint but it was not noticed by the parents and even by the school teachers. Even the World Health organization is also emphasizing in its report 2009 that, "Every minute a child somewhere in the world goes blind and More than 12 million children ages 5 to 15 are visually impaired due to uncorrected refractive errors as a result of near-sightedness, far-sightedness, or astigmatism" these data's also support to WHO's statement, vision screening of school children in developing countries could be useful in identifying curable causes of decreased vision, especially refractive errors which will minimize the long term permanent visual impairment. And also it is the one of the avoidable condition.

Result-7- Corneal Disorder

From the study the investigator found that, **13 percent** of the students affected by corneal disorder the causes of micro cornea, Nystagmus with Colobomo of Iris the part of the eye cornea is affected. The students with corneal problem will have the functional implications that walking in the dim light, with poor contrast, and they cannot see clearly at distance, problem in doing near and distance task, blackboard copying, glare and the children with corneal problem needs high illumination and they may have poor colour vision.

Result-8- Retinal Disorder

The study reveals that, about 10% of the children were affected by Retinitis Pigmentosa is a hereditary condition in which the retinal cells degenerate, particularly the rod cells are degenerated which are responsible for peripheral vision and night vision. In progressive nature there is possibility of leading to night blindness and extremely sensitive to light. The will have the implications of moving to one place to other place without support and particularly they find it extreme problem during the night travel. And it school they cannot read fast, because they can see few letters and they need long time to scan an object and they find it difficult to read the faces of teachers expressions and to copy the black board activities.

Result-9-Optic Atrophy

The result reveals that about 5% of children were affected by Optic atrophy. Optic Dystrophy is the degeneration of the optic nerve fibers so that they are not able to transmit accurate visual images from the retina to the brain. These children will have severe visual acuity problem both distance and near. And they find it difficult in moving in the dim light, and need good contrast to see the materials or to read a materials. And the children with optic problem will find difficult in moving one place to another place. Majority of the children need large print materials.

Result-10- Macular Problem

From the result we can understand that about **3%** of students were affected by the diagnosis of Macular degeneration is an eye disease which results in gradual loss of central vision. Students with macular degeneration have difficulty reading print on the blackboard or page

and other central vision activities, Affects seeing of fine details and needs large size print for reading and writing.

Result-11 - Cortical Visual Impairment

From the study it is noted that, about **3%** of the children were suffering from Cortical visual impairment is caused by damage to the visual cortex in the brain or the nerve pathways. Most students with cortical visual impairment also have other disabilities. The visual response from students with cortical visual impairment is inconsistent. Providing visual stimulation may improve the student's ability to process visual input. Difficulty in seeing details. The Cortical Visual Impairment students will have the following visual implication ie., Incomplete or "blurred" images: Partial perception of people and object, Poor colour discrimination, Difficulty maintaining direct eye contact, Clumsy Reading: asking for enlarged sizes and Inability to discriminate small objects

Conclusion:

From the study, we can understand that there is a urgent need for assessing all school going children and to promote awareness among parents, community and school teachers and to the head of the institutions, which is vital and we should take war foot effort which will helps us to identify and prevent the school age children from the vision impediment which can easily avoidable or prevent are can it be treated earlier. And to screen the children with low vision to provide necessary low vision devices and to provide functional vision training will enhance their visual efficiency.

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